CLAIMS

1. An encapsulated magnet, comprising:

a magnetizable member having a lateral side extending along an axis;

a first can having a first sidewall extending along said axis outside of said lateral sides and a first end transverse to said axis and integral with said first sidewall;

a second can having a second sidewall extending along said axis outside of said lateral sides, a second end transverse to said axis and integral with said second sidewall, and a first annular lip extending along said axis, integral with said second sidewall on a side thereof opposite said second end, and disposed on a side of said first sidewall opposite said magnetic member; and

an adhesive disposed between said magnetizable member and said first and second sidewalls and between said first sidewall and said lip, whereby said magnetic member and said first and second cans are bonded together.

2. The encapsulated magnet of Claim 1, wherein said first and second ends have thicknesses of less than 0.64mm.

3. The encapsulated magnet of Claim 2, wherein said first and second sidewalls and said lip have thicknesses of less than 0.64mm.

4. The encapsulated magnet of Claim 1, wherein said magnetizable member and said first and second cans are substantially circularly symmetric about said axis.

5. The encapsulated magnet of Claim 4, wherein said magnetizable member is shaped as a right circular cylinder.

6. The encapsulated magnet of Claim 4, wherein said magnetizable member is shaped as a toroid and said first and second cans are shaped to have annular troughs.

7. The encapsulated magnet of Claim 6:

wherein said first can has a third sidewall parallel to said first sidewall and integral with said first end; and

wherein said second can includes

a fourth sidewall parallel to said second sidewall and integral with said second end, and

a second annular lip parallel to said first annular lip, integral with said fourth sidewall on a side thereof opposite said second end, and disposed on a side of said third sidewall opposite said magnetic member.

8. The encapsulated magnet of Claim 1, wherein said cans are formed of non-ferromagnetic stainless steel.

9. The encapsulated magnet of Claim 1, wherein said cans are stamped.

10. An encapsulated magnet, comprising:

a cylindrically shaped magnetizable body;

a first canister member including a first sidewall having an outer first diameter and a shape symmetric about a central axis;

a first canister end having at least a portion extending transversely to said central axis and joined to said first sidewall at a first end thereof;

a second canister member having a second sidewall overlapping said first sidewall at a second end thereof and having an inner second diameter larger than said first diameter and a shape symmetric about said central axis and a second canister end extending transversely to said central axis and integral to said second sidewall, said magnetizable body being enclosed within said first and second sidewalls and said first and second canister ends; and

an adhesive included between said magnetizable body and said first and second sidewalls and between overlapping portions of said first and second sidewalls.

11. The encapsulated magnet of Claim 10, wherein said a first canister end is integral with said first canister member.

12. The encapsulated magnet of Claim 11, wherein said second canister member has a third sidewall intermediate and integral with said second canister end and said second sidewall, having an inner third diameter substantially equal to said first diameter and a shape symmetric about said central axis.

13. The encapsulated magnet of Claim 10, wherein said first canister end comprises a third canister member including a third sidewall having an outer third diameter substantially equal to said second diameter, a shape symmetric about said a central axis, and overlapping said first sidewall at said first end thereof.

14. A pair of cans configured to protect a cylindrical member, comprising:

a first can comprising a first continuous can member comprising

a first sidewall circularly symmetric about and extending along a first axis, having an inner first diameter and an outer second diameter differing therebetween by twice a first wall thickness, and

a first end extending transversely to said first axis, having a first end thickness, and connected to said first sidewall; and

a second can comprising a second continuous can member comprising

a second sidewall circularly symmetric about and extending along a second axis disposable along said first axis, having an inner third diameter and an outer fourth diameter differing therebetween by twice a second wall thickness,

a second end extending transversely to said second axis and connected to said second sidewall, and

a third sidewall circularly symmetric about and extending along said second axis, having an inner fifth diameter larger than said second diameter by a first clearance and an outer sixth diameter greater than said fifth diameter by twice a third wall thickness, and connected to said

second sidewall on a side thereof opposite said second end;

whereby said third sidewall is slidable over a radial outside of said first sidewall so that said first and second can members are able to partially overlap along said first axis.

15. The pair of cans of Claim 14, wherein said first and third diameters are substantially equal and said second and fourth diameters are substantially equal.

16. The pair of cans of Claim 14, wherein said end thicknesses are less than 0.64mm.

17. The pair of cans of Claim 16, wherein said end thicknesses are less than 0.38mm.

18. The pair of cans of Claim 17, wherein said first, second, and third wall thicknesses are less than 0.64mm.

19. The pair of cans of Claim 18, wherein said first and second can members comprise non-magnetic stainless steel.

20. The pair of cans of Claim 17, wherein said first clearance is less than 0.2mm.

21. The pair of cans of Claim 20, wherein said first clearance is greater than 0.013mm.

22. The pair of cans of Claim 16, wherein said can members comprise non-ferromagnetic stainless steel.

23. The pair of cans of Claim 16, wherein said first and second can members are stamped.

24. A method of encapsulating a first member having sides extending along an axis and two member ends extending transversely to said axis, comprising the steps of:

providing a first integrally formed can member comprising (1) at least a first sidewall extending along said axis and having an interior surface accommodating said first member and (2) a first can end extending transversely to said axis;

providing a second integrally formed can member having at least a second sidewall extending along said axis and having an interior surface accommodating said first member, (2) a second can end extending transversely to said axis, (3) a third sidewall extending along said axis and having an interior surface accommodating said first sidewall with a clearance therebetween;

applying a flowable and curable adhesive to said member ends and inserting said member ends into respective ones of said first and second can members;

overlapping said first and third sidewalls; and

pressing said two can members together along said axis.

25. The method of Claim 24, wherein said overlapping and pressing steps cause said adhesive to flow between said first member and said first and second sidewalls and to flow between said first and third sidewalls.

26. The method of Claim 25, wherein said overlapping and pressing steps cause said adhesive to flow to an exterior of said overlapped first and second sidewalls.

27. The method of Claim 24, wherein said providing steps include drawing respective blank portions and wherein wall thicknesses of end walls of said first and second can members are less than 0.64mm.

28. The method of Claim 27, wherein said wall thicknesses of said first and second sidewalls are less than 0.64mm.

29. In a plasma processing reactor including a vacuum pump and means to excite a

gas into a plasma to process a substrate supported within said reactor,

THE IMPROVEMENT COMPRISING

a plurality of encapsulated magnets operatively associated with said plasma processing reactor and comprising respective ones of:

a rod magnet extending along an axis;

a first integrally formed can member formed of a non-magnetic stainless steel and comprising (1) at least a first sidewall extending along said axis and having an interior surface inside of which is disposed said rod magnet and (2) a first can end extending transversely to said axis;

a second integrally formed can member formed of said non-magnetic stainless steel and comprising (1) a second sidewall extending along said axis and having an interior surface inside of which is disposed said rod magnet, (2) a second cam end extending transversely to said axis, (3) a third sidewall extending along said axis and having an interior surface accommodating said first sidewall;

an adhesive bonding said rod magnet to said first and second sidewalls and bonding said first and third sidewalls together.

30. The plasma processing reactor of Claim 29, wherein said first and second can members are drawn from said non-magnetic stainless steel.

31. The plasma processing reactor of Claim 29, wherein said first and second can ends and said first, second, and third sidewalls have wall thicknesses of less than 0.64mm

32. The plasma reactor of Claim 29, wherein a radius of an interior of said third sidewall is larger than a radius of an exterior of said first sidewall by less than 0.2mm.